

REMARKS

Claims 1 to 22 are pending in the instant application. Claims 21 and 22 are new. The amendments to the claims and the new claims are fully supported by the specification, claims, and drawings as originally filed.

Reconsideration of the Examiner's decisions and reexamination of this application are respectfully requested.

Objection to the drawings:

The specification on page 17, line 14 has been amended to change reference number "42" to reference number "43". A new sheet of drawings with the change made is provided for the Examiner's approval.

Objection to the specification:

The specification has been amended to indicate the related application.

Objections to the claims:

Claims 6, 7, 8, 15 and 17 have been objected to because of various formalities. In claims 6 and 15, the full name of tetramethylammonium hydroxide has been included, in claim 7 the second period has been deleted and in claims 8 and 17, the units for the pitch spacing have been included. All of the preceding changes are in the nature of clarifications and are not meant to otherwise limit the meaning or interpretation of the claims.

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The §112 rejections:

Claims 1 to 11, 14 and 16 have been rejected by the Examiner under 35 USC §112, second paragraph, as being indefinite.

With respect to claim 1 (and dependent claims 2 to 11 as well), the Examiner considers the phrase "first pattern" indefinite with respect to a first nozzle in the second spray nozzle assembly. The "first pattern" has been clarified by changing it to "third pattern" since there is no requirement that the patterns sprayed by the first nozzles in each of the spray nozzle assemblies need be the same.

With respect to claims 5 and 14, the Examiner states that these claims are indefinite because the function of the conduit is unclear. First, the requirement of a dependent claim is that it further limit a preceding claim; that claims 5 and 14 do. Both of claims 1 and 12 recite a supply conduit and claims 5 and 14 limit the supply conduit. Second, it is not required to recite the function of the conduit in the claim. However, the Examiner is directed to Applicants' specification (e.g., the paragraph bridging pages 17 and 18) wherein it is explained that the supply conduit for the second nozzle is insulating so that current is not directed back down the supply line. Accordingly, amendment of claims 5 and 14 is not necessary.

With respect to claims 7 and 16, the limitations of "0.2 to 2 weight percent" and "0.4 to 0.5 weight percent" have been split into separate dependent claims in order to clarify the meaning of the claims. The limitations of "0.4 to 0.5 weight percent" now appear in claims 21 and 22.

The §102 rejections:

Claims 1 to 4, 10 to 13, 19 and 20 have been rejected by the Examiner under 35 USC §102(b) as being anticipated by European Patent Application 0 870 854 (hereafter "EP '854").
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It is noted that the Examiner states that nozzles 1 and 2 provide electrolytic cleaning and nozzles 4 and 5 "must also have supply lines to supply cleaning agent to the solution".

It is submitted that the Examiner has failed to show that EP '854 recites every feature of Applicants' claims 1 and 12. In Applicants' claims 1 and 12, a first nozzle during a first pass sprays the cleaning agent to chemically and mechanically remove residual material while a second nozzle in a second pass sprays the cleaning agent to chemically and electrochemically remove the remaining residual material. Applicants' invention is distinguishable from EP '854 in several respects.

First, Applicants' apparatus chemically and mechanically removes residual material and then chemically and electrochemically removes the remaining residual material. EP '854 electrocleans first and then rinses second.

Second, the action provided by nozzles 4 and 5 is merely rinsing the cleaning agent applied by nozzles 1 and 2. The "cleaning agent" provided by nozzles 4 and 5 of EP '854 apparently does not provide any chemical and mechanical removal of residual material as does Applicants' first spraying of the cleaning agent.

Third, the cleaning agent (i.e., the cleaning agent) is the same applied by both of the first and second nozzles in Applicants' invention whereas in EP '854 a cleaning agent (alkali solution) is first applied by nozzles 1 and 2 and then nozzles 4 and 5 apply rinsing water.

For all of the above reasons, EP '854 cannot anticipate Applicants' claims 1 and 12. Inasmuch as claims 2 to 4, 10, 11, 13, 19 and 20 depend from claims 1 and 12, and since claims 1 and 12 are believed to be patentable over the cited art, then claims 2 to 4, 10, 11, 13, 19 and 20 are believed to be patentable as well. No independent ground of patentability is asserted for claims 2 to 4, 10, 11, 13, 19 and 20 at this time.

The §103rejections:

I. Claims 1 to 3, 10 to 12, 19 and 20 have been rejected by the Examiner under 35 USC §103(a) as being unpatentable over Casey et al. U.S. Patent 6,032,683 (hereafter "Casey") in view of Hogaboom U.S. Patent 2,307,928 (hereafter "Hogaboom").

With respect to claims 1 and 12, it is submitted that the Examiner has failed to state a prima facie case of obviousness. Applicants were well aware of Casey at the time of their invention as evidenced by the fact that Casey is cited in Applicants' application. As recognized by the Examiner, Casey only discloses chemical cleaning. Casey does not disclose electrochemical cleaning. While Hogaboom does disclose electrochemical cleaning, the apparatus is different. In Hogaboom, a chamber comprising two box halves 15 and 17 contains a cleaning fluid supplied by conduit 67 that sprays the fluid onto a metal sheet 13. A power source is connected to the chamber so that current flows from the chamber through the cleaning fluid and then to the metal sheet. At no time is the conduit 67 electrified. Conversely, Applicants' invention recites "a power source electrically connected to the second nozzle", a feature not taught by Casey or Hogaboom.

It is further submitted that the Examiner has failed to state a cogent motivation for combining Casey and Hogaboom. Since Casey (chemical cleaning only) and Hogaboom (electrochemical cleaning only) are each apparently successful in removing residual material, where is the motivation to combine Casey and Hogaboom? It is submitted that neither of the references provide any kind of motivation for combining them.

Accordingly, as the Examiner has failed to provide prior art which teaches every element of Applicants' invention as embodied in claims 1 and 12 and a proper motivation for combining Casey and Hogaboom, it is submitted that the Examiner has failed to state a prima facie case of obviousness. Claims 1 and 12 then must be deemed to be patentable over the prior art.

Inasmuch as claims 2, 3, 10, 11, 19 and 20 depend from claims 1 and 12, and claims 1 and 12 are patentable, it follows that claims 2, 3, 10, 11, 19 and 20 are also patentable.

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12 are believed to be patentable, then claims 2, 3, 10, 11, 19 and 20 should be patentable as well. No independent ground of patentability is asserted for claims 2, 3, 10, 11, 19 and 20 at this time.

II. Claims 4 and 13 have been rejected by the Examiner under 35 USC §103(a) as being unpatentable over Casey in view of Hogaboom and further in view of EP '854.

Inasmuch as claims 4 and 13 depend from claims 1 and 12, and since claims 1 and 12 are believed to be patentable, then claims 4 and 13 are believed to be patentable as well. No independent ground of patentability is asserted for claims 4 and 13 at this time.

III. Claims 5 and 14 have been rejected by the Examiner under 35 USC §103(a) as being unpatentable over EP '854 in view of Geissler et al. U.S. Patent 6,238,529 (hereafter "Geissler").

As Applicants explained above, EP '854 does not teach Applicants' invention as embodied in claims 1 and 12. Beyond that, Geissler does not teach an insulating supply conduit as taught by Applicants. It is noted that Geissler teaches the "flood tubes" and supply lines are made of plastic. However, this does not teach Applicants' invention as embodied in claims 5 and 14 which requires an insulating supply conduit in conjunction with a power source connected to the nozzle. The object of this aspect of Applicants' invention is to avoid current from the nozzle going back down the supply line. Since Geissler's nozzle is not connected to a power source, the teaching of Geissler is not applicable to Applicants' invention. Since EP '854 cannot supply the deficiencies of Geissler, claims 5 and 14 must be considered to be allowable over the cited combination of prior art.

IV. Claims 4 and 13 have been rejected by the Examiner under 35 USC §103(a) as being unpatentable over Casey in view of Hogaboom and Geissler. [[Does the Examiner mean claims 5

and 14 instead of claims 4 and 13? Applicants will proceed on the basis that the Examiner meant claims 5 and 14.]]

As Applicants explained above, Casey and Hogaboom do not teach Applicants' invention as embodied in claims 1 and 12. Moreover, as noted above in III, Geissler fails to teach an insulating supply conduit in combination with a power source connected to the nozzle. Since Casey and Hogaboom cannot supply the deficiencies of Geissler, claims 5 and 14 must be considered to be allowable over the cited combination of prior art.

V. Claims 6, 7, 9 15, 16 and 18 have been rejected by the Examiner under 35 USC §103(a) as being unpatentable over EP '854 in view of Chandross et al. U.S. Patent 5,849,173 (hereafter "Chandross").

Inasmuch as claims 6, 7, 9, 15, 16 and 18 depend from claims 1 and 12, and since claims 1 and 12 are believed to be patentable, then claims 6, 7, 9, 15, 16 and 18 should be patentable as well.

In addition, claims 7 and 16 are believed to be independently patentable. It is noted that EP '854 fails to teach Applicants' claims 1 and 12. EP '854 in combination with Chandross does not teach Applicants' claims 7 and 16. Chandross discloses a concentration of TMAH applicable to electrolytic etching where the part to be etched is immersed in the etchant. There, concentration of the TMAH is not expected to be critical. Applicants' invention, however, sprays the TMAH through a nozzle onto the workpiece and uses the TMAH to conduct electricity between the nozzle and the article to be cleaned. The concentration of TMAH is much more critical here. Accordingly, the teaching of Chandross is not directly applicable to Applicants' invention. Thus, claims 7 and 16 (as well as claims 21 and 22) are believed to be independently patentable.

VI. Claims 6, 7, 9 15, 16 and 18 have been rejected by the Examiner under 35 USC §103(a) as being unpatentable over Casey in view of Hogaboom and Chandross.

Inasmuch as claims 6, 7, 9, 15, 16 and 18 depend from claims 1 and 12, and since claims 1 and 12 are believed to be patentable, then claims 6, 7, 9, 15, 16 and 18 should be patentable as well.

In addition, claims 7 and 16 are believed to be independently patentable. It is noted that Casey and Hogaboom fail to teach Applicants' claims 1 and 12. Casey and Hogaboom in combination with Chandross do not teach Applicants' claims 7 and 16. Chandross is deficient for the same reasons as noted in V. above. Thus, claims 7 and 16 (as well as claims 21 and 22) are believed to be independently patentable.

VII. Claims 8 and 17 have been rejected by the Examiner under 35 USC §103(a) as being unpatentable over EP '854 in view of Wee et al. U.S. Patent 6,383,303 (hereafter "Wee").

Inasmuch as claims 8 and 17 depend from claims 1 and 12, and since claims 1 and 12 are believed to be patentable, then claims 8 and 17 are believed to be patentable as well. No independent ground of patentability is asserted for claims 8 and 17 at this time.

VIII. Claims 8 and 17 have been rejected by the Examiner under 35 USC §103(a) as being unpatentable over Casey in view of Hogaboom and Wee.

Inasmuch as claims 8 and 17 depend from claims 1 and 12, and since claims 1 and 12 are believed to be patentable, then claims 8 and 17 are believed to be patentable as well. No independent ground of patentability is asserted for claims 8 and 17 at this time.

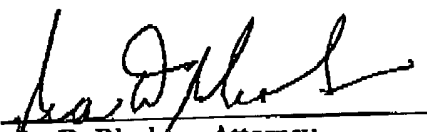
Summary:

In view of all of the preceding remarks, it is submitted that all of claims 1 to 22 are in condition for allowance. If the Examiner finds this application deficient in any respect, the Examiner is invited to telephone the undersigned at the Examiner's earliest convenience to resolve such deficiency.

If any fees are required, however, the Commissioner is hereby authorized to charge such fees to Deposit Account No. 09-0458.

Respectfully submitted,
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